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<input type="checkbox"/>	L8	vitamin same free\$flowing	191
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L4: Entry 11 of 18

File: USPT

Aug 21, 1990

DOCUMENT-IDENTIFIER: US 4950488 A

TITLE: Process of using precipitated amorphous silica or silicate as grinding aid for fish meal or fish food

Brief Summary Text (4):

It therefore becomes necessary to feed these fishes the most economical way. To accomplish this, it is standard practice to use the parts of fish which are not used for human consumption, such as bones, tails, heads, gill, etc., as part of the fish feed. The advantage of this practice is the high nutritional value of these parts as well as their low cost and abundance. These parts of the fish feed are called fish meal. Other parts of the final fish feed are, for example, corn cobs, grain, soy, minerals, vitamins and amino acids.

Detailed Description Text (5):

The same test as before was operated except that prior to introduction into the mill, the mix had been treated with 1% of a precipitated amorphous silica (SIPERNAT 50) with a surface area of approximately 450 m.sup. 2/g and an apparent particle size of 50 micron. This precipitated amorphous silica was selected because of its high oil absorption of 350 g/100g as measured by a Brabender Plastograph. Fish meal and silica were mixed for two minutes in a horizontal ribbon blender. This short mixing time had from previous experiments been proven to be sufficient.

## CLAIMS:

1. A process for preparation, of free-flowing fish food comprising the steps of: admixing a grinding aid additive selected from the group consisting of precipitated amorphous silica, precipitated amorphous silicate or amorphous silica gel with a feed selected from the group consisting of fish food and fish meal, and grinding the resulting admixture.

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L4: Entry 12 of 18

File: USPT

Apr 11, 1989

DOCUMENT-IDENTIFIER: US 4820532 A

TITLE: Preparation of a low-dust free-flowing choline chloride powderAbstract Text (1):

A low-dust, free-flowing choline chloride powder based on natural carriers or silica, the choline chloride content on natural carriers being from 30 to 60% by weight and that on silica being from 30 to 80% by weight, based on the choline chloride powder, is prepared by a process in which

Brief Summary Text (1):

The present invention relates to the preparation of low-dust free-flowing choline chloride powder based on natural carrier-s or silica and having a controlled particle size distribution.

Brief Summary Text (2):

Choline is a member of the group consisting of the vitamins of the B complex and is widely used for enriching animal feeds. Because it cannot be handled and used in the free form, salts of choline are generally prepared, in particular choline chloride. Choline is indispensable in the metabolism of fats. In many animal species, choline deficiency initially leads to fatty degeneration of the liver and renal damage and subsequently to cirrhosis of the liver. In poultry, for example, deformities of joints and bones, retarded growth and increased mortality are observed.

Brief Summary Text (3):

As a pure solid, choline chloride is extremely hygroscopic. In contact with the atmosphere, the product immediately attracts water vapor and becomes liquid. For this reason, it cannot be sold as the pure substance. As a feed additive, choline chloride is used either in dissolved form (75-78% strength aqueous solution) or as a 50% strength dry powder with an inorganic or organic carrier (adsorbate). A known inorganic carrier for choline chloride is highly porous silica, which, when mixed with choline chloride and dried, gives a dry, free-flowing powder which is sold in this form. Highly absorptive, milled natural products, such as corncob flour, rice husks, malt culms and puffed starch made from wheat, corn, etc., are used as organic carriers.

Brief Summary Text (6):

U.S. Pat. No. 2,879,161 discloses that silica is a very suitable carrier for choline chloride since it has an extremely high adsorption capacity and can therefore absorb up to 65% by weight of choline chloride solution during mixing. After the mixing process, a white, pulverulent, free-flowing end product containing about 50% by weight of choline chloride, 33% by weight of silica and 17% by weight of water is obtained.

Brief Summary Text (15):

We have found that this object is achieved, according to the invention, by a process for the preparation of a low-dust free-flowing choline chloride powder based on natural carriers or silica, the choline chloride content on natural carriers being from 30 to 60% by weight and that on silica being from 30 to 80% by weight, based on the choline chloride powder, wherein

Detailed Description Text (1):

The novel process permits the use of a silica having a mean particle size of about 80  $\mu\text{m}$  and a specific surface area of 190  $\text{m}^2/\text{g}$ . The end product obtained after mixing, drying and cooling has a low dust content, is free-flowing and non-hygroscopic and preferably has a particle size range of from 100 to 1,000  $\mu\text{m}$ .

Detailed Description Text (5):

Particularly suitable silicas are hydrophilic silicas having a particle size of from 40 to 300  $\mu\text{m}$  and a specific surface area of from 100 to 300  $\text{m}^2/\text{g}$ .

Detailed Description Text (8):

Specifically, the preparation of a free-flowing, homogeneous mixture having an optimum distribution of active ingredient in the natural carrier is effected, for example, by impregnating the natural carrier with the choline chloride solution, which is, for example, 78% strength, in a mixer at from 60.degree. to 100.degree. C. during a very short mixing time of, for example, 20 minutes. The mixing time and the absorption of choline chloride by the natural carrier are controlled by the mixing temperature. The mixture has a moisture content of 15-19% by weight and is loose and free-flowing, and the active ingredient is completely and homogeneously taken up by the organic carrier.

Detailed Description Text (12):

100 kg of choline chloride solution (78% by weight of choline chloride and 22% by weight of water) are initially taken in a mixer, and 0.5 kg of Ca stearate and 19 kg of finely divided silica (Sipernat.RTM. 22 from Degussa) are metered into the stirred solution. After a mixing time of less than 20 minutes at a mixing temperature of from 60.degree. to 100.degree. C., the suspension is dispersed continuously into a fluidized bed via a two-material nozzle by means of compressed gas, and is dried there. The dried end product is then cooled to less than 50.degree. C. in a product cooler to give a low-dust, free-flowing choline chloride powder which does not stick together in the air and contains 80% by weight, based on dry material, of choline chloride on silica.

Detailed Description Text (14):

100 kg of wheat bran are initially taken in a mixer at a low rotary speed, and 169.5 kg of choline chloride solution (78% by weight of choline chloride and 22% by weight of water) are metered in. After an impregnation time of less than 20 minutes at a mixing temperature of 60.degree.-100.degree. C., the loose, free-flowing moist organic material is discharged into an intermediate hopper and is continuously dispersed from there by means of a double-blade screw into a fluidized bed drying apparatus. The concentrate dried in the fluidized bed is cooled in a product cooler to below 50.degree. C. and then screened, and the oversize obtained is comminuted in a mill in a gentle manner which produces little dust.

Detailed Description Text (15):

The process gives a low-dust free-flowing product having a homogeneous distribution of active ingredient and a particle size spectrum in which 90% of the particles are in the range from 200 to 1,000  $\mu\text{m}$ .

## CLAIMS:

1. A process for the preparation of a low-dust, free-flowing powder containing choline chloride and a natural organic carrier or a silica carrier which consists essentially of the steps:

(a) mixing an aqueous choline chloride solution with a natural carrier or a porous silica carrier in the ratio of 70 to 40% by weight of choline chloride and 30 to 60% by weight of a natural carrier, or 70 to 20% by weight to choline chloride and 30 to 80% by weight of silica to form a moist mixture;

(b) spraying the mixture from step (a) continuously into a fluidized bed, said bed already containing added dry choline chloride powder, and drying the mixture within the bed at a temperature of from 90.degree. to 180.degree. C.; to form a powder containing choline chloride and a natural organic carrier or a silica carrier and

(c) continuously removing the powder from the fluidized bed and cooling the powder to below 50.degree. C.;

(d) controlling the particle size of the components of the mixture to produce a low dust, free flowing powder having a final particle size range of 100-1000 .mu.m.

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L4: Entry 14 of 18

File: USPT

Jan 5, 1988

DOCUMENT-IDENTIFIER: US 4717561 A

**\*\* See image for Certificate of Correction \*\***TITLE: Precipitated silica carrier for vitaminsAbstract Text (1):

Free flowing, substantially dust-free, dense granular amorphous precipitated silica having a principal particle size of between about 0.14 millimeters and about 0.84 millimeters are described. This material is particularly suitable as an inert carrier for water-soluble and fat soluble nutritional supplements, e.g., vitamins, which are added to feeds for livestock.

Brief Summary Text (3):

Some nutrients are required in larger amounts for some animals or birds than for others. Choline, for instance, has been shown to be required in relatively larger amounts in chick and poultry rations. Some feeds suitable in most respects for poultry or other animals may or may not be good sources of choline and other known nutritional substances and these may be added if the total ration lacks the amount required to adequately nourish the animal or bird. In recent years, vitamin B.sub.12 has been found to have great value when added to certain feeds or combinations of feeds. It is now routinely added by most feed manufacturers in preparing certain feeds to insure the presence of enough of the substance for optimum growth. Thus, feed manufacturers and/or the feed compounders typically take care to provide in their feed products the minimum required amounts of essential nutrients and vitamins to insure adequate growth of the animal or bird ingesting the feed and to avoid the ill effects associated with the lack of an adequate amount of such nutrients and vitamins.

Brief Summary Text (4):

Certain vitamins, depending on their form, are absorbed onto inert carriers, e.g., finely-divided silica, and the resulting absorbate product admixed or blended with the feed. The carrier must be chemically inert with respect to the vitamin with which it is mixed and also harmless to the animal or bird which ingests the absorbate product. Further, the carrier must yield the absorbed vitamin to the livestock as it passes through the digestive tract, i.e., the vitamin must be available for use by the livestock.

Brief Summary Text (5):

It has now been discovered that certain amorphous precipitated silica is particularly suitable as an inert carrier for vitamins fed to livestock as a nutritional supplement. Such precipitated silica is a free-flowing, substantially dust free, granular material having a density of at least about 14 pounds per cubic foot, (224 kg/m.sup.3) a principal particle size of between about 0.14 millimeters and about 0.84 millimeters, a surface area of from about 140 to about 160 square meters per gram and an oil absorption of from about 160 to about 220 milliliters. More particularly, the aforesaid amorphous precipitated silica will have a density of between about 14 and 18 pounds per cubic foot, (224-288 kg/m.sup.3) preferably between about 15 and about 17 pounds per cubic foot (240-272 kg/m.sup.3).

Brief Summary Text (6):

Amorphous precipitated silica used as an inert carrier for vitamins in accordance

with the present invention is free flowing and substantially dust-free. By substantially dust-free is meant that the silica contains less than 4, preferably less than 1, weight percent of material less than 200 Tyler mesh. A 200 Tyler mesh screen has an opening of 0.074 millimeters. Preferably, less than 5 weight percent of the silica will be less than 100 Tyler mesh. A 100 Tyler mesh screen has an opening of 0.147 millimeters. The particles of the silica will principally range between about 0.84 millimeters (sub 20 Tyler mesh) and 0.14 millimeters (plus 100 Tyler mesh). Typically less than 1 weight percent of the silica is greater than 0.84 millimeters (plus 20 Tyler mesh). Hence, at least about 94 weight percent of the particles are within the aforesaid range. The distribution of the particles within the aforesaid range is not critical. However, the products typically will have about 50 percent of the particles between -20 Tyler mesh and +60 Tyler mesh (0.25 millimeters) with the remainder between about -60 Tyler mesh and +100 Tyler mesh.

Brief Summary Text (9):

The amorphous precipitated silica described above can be prepared by reaction of an aqueous solution of a soluble silicate, e.g., sodium, lithium or potassium silicate, most usually sodium silicate, with inorganic mineral acid, most notably carbonic acid, sulfuric acid or hydrochloric acid. Typically, sodium silicate having an  $\text{Na}_2\text{O}:\text{SiO}_2$  ratio of about 3.3 is used to prepare the aqueous solution of the soluble silicate. Particularly suited as the mineral acid is carbonic acid, which is formed in situ by the introduction of carbon dioxide into the silicate solution. This method for preparing amorphous, precipitated silica is described in U.S. Pat. No. 2,940,830. The resulting precipitated silica is usually washed in suitable vessels to remove a portion of the soluble alkali metal inorganic salt incorporated therein during the precipitation process and thereafter the pH of the silica adjusted with an inorganic mineral acid, usually hydrochloric acid (although sulfuric acid may be used), to a final essentially neutral pH of between about 6.5 and about 7.3. The resulting silica is dried in a rotary or drum dryer and the dried product classified, e.g., by screening, to obtain the principal particle size distribution described hereinabove. Preferably, the dried silica is conveyed with agitation, e.g., pneumatically, to the classification step. Agitation of the finely-divided silica assists in the formation of the bead-like, essentially spherical particles. Agitation followed by classification also reduces a potential source of -200 Tyler mesh silica product produced by abrasion of the silica particles as a result of handling of the dry product--such fines being produced and then screened away from the final product. Hence, the silica product of the present invention is essentially non-friable (non-brittle) and is sufficiently hard so that it resists further degradation during further handling and processing, e.g., during blending with the vitamin(s) and feed and during storage and transportation.

Brief Summary Text (10):

Vitamins absorbed by the amorphous precipitated silica of the present invention may be any of those fat soluble or water soluble vitamins which are nutritionally essential to livestock. A suggested definition for vitamins is, "an organic substance of nutritional nature which in low concentrations, as an intrinsic part of enzyme systems, catalyzes reactions required by the organism, and the organism may or may not have a capacity for the biosynthesis of the substance." As used herein, the term vitamin is intended to include vitamers, which are organic compounds structurally related to the particular vitamin which possess similar activity. Further, the term vitamin and/or vitamer is intended to include the pure compound, isomers thereof and derivatives, e.g., esters, which are utilized as the market form or source of the vitamin.

Brief Summary Text (11):

Fat-soluble vitamins are vitamins A, D, E, and K while the water-soluble vitamins are vitamins C and the B group vitamins. Such and other vitamins may be absorbed onto the silica as such, provided the vitamin is a liquid at the temperatures of use, or the vitamin may be incorporated with the silica in the form of an aqueous

dispersion or an oil concentrate. Typically, the vitamin, e.g., vitamins A, D and E, is incorporated into an oil and used as an oil concentrate.

Brief Summary Text (12):

Among the vitamins that may be utilized in accordance with the present invention are vitamin A, vitamin D, vitamin E (alpha-tocopherol), vitamin B.sub.1 (thiamine), vitamin B.sub.2 (riboflavin), niacin, vitamin B.sub.6 (pyridoxine), biotin, pantothenic acid, vitamin B.sub.12 choline, vitamin C (ascorbic acid), folic acid, para-aminobenzoic acid, and inositol.

Brief Summary Text (13):

The amount of vitamin mixed with the silica will vary depending on the end use of the vitamin supplement. As indicated, the needs of various livestock, i.e., animals or poultry, for the various essential vitamins varies and depends, in part, on the presence or absence of such vitamins in the feed given to the livestock. Further, a silica absorbate containing relatively small amounts of vitamin may be used with the feed or silica containing relatively larger amounts of vitamin may be added to the feed as a concentrate. Consequently, the silica may contain between about 0.02 and about 50 weight percent of at least one vitamin, which absorbate is used as a vitamin supplement. The amount of vitamin added to the silica will be such as to provide a nutritionally effective amount of the vitamin or vitamins absorbed thereon to the livestock, i.e., an amount needed to adequately nourish the livestock. The vitamin and/or its source, e.g., liquid concentrate, and the silica may be blended or mixed by any conventional liquid-solid equipment means useful for admixing materials of the physical characteristics of the silica and vitamin used herein.

Brief Summary Text (14):

The present invention is more particularly described in the following example which is intended as indicative of the bioavailability of vitamins when used with the silica of the present invention.

Detailed Description Text (2):

Selenium-deficient, vitamin E-depleted chicks were used to test the vitamin E biopotency of four dry preparations of vitamin E compared to a standard. The animal used in the evaluation shows reduced growth, impaired efficiency of feed utilization and the disease exudative diathesis unless fed adequate amounts of vitamin E or selenium. Use of a low selenium, tocopherol-free semipurified basal diet supplemented with graded levels of each of the vitamin E preparations results in incremental improvements in growth and feed utilization and in reduced incidence of exudative diathesis. This reduced instance of exudative diathesis, most specific for available vitamin E in the diet, was used to evaluate biopotency.

Detailed Description Text (3):

Day-old male vitamin E- and selenium-depleted single comb white leg horn chicks were used for the evaluation. The chicks were housed in thermostatically controlled battery brooders equipped with raised wire floors. Feed and water were provided ad libitum. The chicks were fed a low selenium (less than 0.02 parts per million), tocopherol-free semipurified diet containing adequate amounts of all other known nutrients. The diet was supplemented with graded levels of a vitamin E (0, 5, 10, 20, 40, or 80 IU/kg) from each of the sources tabulated in Table 1.

Detailed Description Text (5):

Each test preparation of vitamin E increased the rate of growth, reduced the ratio of feed to gain, reduced mortality and reduced the incidence of exudative diathesis. The overall results, as ranked by overall means for each performance parameter by source of vitamin E, indicated that preparations A-D sustained growth with efficacies comparable to the standard. The various preparations differed with respect to efficacy in prevention of exudative diathesis (Table 4). When these data were fitted for each vitamin E preparation to log dose-probit of response models,



the efficacies could be expressed as the effective dietary concentration to prevent exudative diathesis in 50 percent of the population (EC.sub.50) (Table 6). The data suggested that preparations A and B had the greatest biopotencies of any of the dry forms tested. Preparation A was as efficacious as the Standard (Table 6). The data for preparations B, C, and D overlapped the data for the Standard and for a preparation (not reported) used in the study (ranked "B") that was significantly below the standard statistically.

Detailed Description Paragraph Table (1):

TABLE 1	Experimental Source Potency Code
Experimental Silica.sup.2 + Vitamin E 510 IU/gm A Flo-Gard .RTM. Type Silica.sup.3 + 502 IU/gm B Vitamin E Hi-Sil .RTM. EP Silica.sup.4 + Vitamin E 521 IU/gm C Zeosyl 110 SD.sup.5 + Vitamin E 517 IU/gm D	Vitamin E.sup.1, USP 976 IU/gm STD
Dialpha-tocopheryl acetate. .sup.2 Silica product of the present invention. .sup.3 An amorphous precipitated spray dried silica having a surface area of about 150 m.sup.2 /g, an oil absorption of about 290 ml, a bulk densit of about 12 lbs/ft.sup.3 (192 kg/m.sup.3) and a median particle size (as measured by Coulter Cou nter) of about 70 microns. .sup.4 An amorphous precipitated silica having a surface area of about 60 m.sup.2 /g, an oil absorption of about 175 ml, a bulk density of about 14 lbs/ft.sup.3 (224 kg/m.sup.3) and a median particle size (as measured by Coulter Counter) of about 9 microns. .sup.5 A finely granulated type of hydrated silicon dioxide having a reported surface area of about 120-150 m.sup.2 /g, reported oil absorptio of about 180-200 cc/100 g (Linseed Oil RubOut Method) a bulk density of 13-15 lb/ft.sup.3, (2 08-240 kg/m.sup.3) and a reported average particle size of 12-14 microns.	

Detailed Description Paragraph Table (2):

TABLE 2																	
Influences of Vitamin E Preparations on Two-Week Gain of Chicks. level, IU/kg																	
Source 0 5 10 20 40 80																	
																Std.	
29.5	+-.	1.5	44.7	+-.	1.3	45.3	+-.	0.6	59.0	+-.	3.0	55.3	+-.	3.2	57.2	+-.	3.2
A --	35.9	+-.	2.6	43.4	+-.	4.7	44.7	+-.	4.6	58.0	+-.	1.6	52.2	+-.	3.0	B --	
42.7	+-.	1.6	45.8	+-.	1.2	47.1	+-.	2.4	52.5	+-.	4.1	59.0	+-.	2.0	C --	37.2	+-.
. 1.8	40.1	+-.	1.2	42.1	+-.	2.2	53.4	+-.	6.6	58.1	+-.	5.0	D --	33.2	+-.	3.1	
40.1	+-.	6.4	45.5	+-.	3.8	49.1	+-.	3.0	55.9	+-.	0.8						

Detailed Description Paragraph Table (3):

TABLE 3																	
Influence of <u>Vitamin E</u> Preparation on Efficiency of Feed Utilization (feed/gain)																	
level, IU/kg Source 0 5 10 20 40 80																	
																	Std.
2.65	+-	.10	2.45	+-	.26	2.10	+-	.07	1.93	+-	.05	2.08	+-	.07	2.08	+-	.06
A --	2.44	+-	.11	2.27	+-	.06	2.22	+-	.10	1.94	+-	.08	2.18	+-	.03	B --	
2.10	+-	.12	2.09	+-	.06	2.24	+-	.04	2.19	+-	.15	2.06	+-	.05	C --	2.26	+-
. .10	2.28	+-	.04	2.31	+-	.11	2.09	+-	.08	2.00	+-	.04	D --	2.56	+-	.12	
2.35	+-	.24	2.19	+-	.13	2.21	+-	.06	2.08	+-	.02						

Detailed Description Paragraph Table (4):

TABLE 4																
Influence of Vitamin E Preparation on the Incidence (%) of Exudative Diathesis																
level, IU/kg Source 0 5 10 20 40 80																
																Std.
100.0	+-.	0.0	80.0	+-.	5.8	76.7	+-.	6.7	43.3	+-.	6.7	33.3	+-.	12.0	16.7	+-.
3.3 A	--	90.0	+-.	0.0	73.3	+-.	8.8	53.3	+-.	6.7	36.7	+-.	3.3	16.7	+-.	6.7 B
76.7	+-.	13.3	70.0	+-.	5.8	46.7	+-.	12.8	46.7	+-.	3.3	6.7	+-.	6.7	C	--
96.7	+-.	3.3	83.3	+-.	3.3	70.0	+-.	10.0	63.3	+-.	18.6	23.3	+-.	3.3	D	--

96.7 .+- . 3.3 83.3 .+- . 3.3 63.3 .+- . 3.3 53.3 .+- . 3.3 23.3 .+- . 6.7

Detailed Description Paragraph Table (5):

TABLE 5 Overall Averages for Each Source of  
Vitamin E Exudative Gain Diathesis Source g Feed/gain %  
 Std 48.0.<sup>sup.a,1,2</sup> .sup. 3.27.<sup>sup.1</sup> .sup.  
 59.8.<sup>sup.1</sup> A 43.9.<sup>sup.ab</sup> 2.29 61.7 B 46.1.<sup>sup.a</sup> 2.22 57.8 C 43.9.<sup>sup.ab</sup> 2.25 72.8 D  
 42.8.<sup>sup.ab</sup> 2.32 70.0 .sup.1 Mean .+- . SE  
 for 18 lots of 10 chicks each per treatment. .sup.2 Means with like superscripts  
 are not significantly different (P > .05).

Detailed Description Paragraph Table (6):

TABLE 6 Comparison of Relative Efficacies of  
Vitamin E Preparations in Preventing Exudative Diathesis in the Chick  
 EC .sub.50.<sup>sup.1</sup>- Preparation IU/kg 95% Confidence Limits RANK  
 Std 20.0 13.1-30.6 A A 23.7 21.6-26.0 A B  
 19.2 4.8-73.9 AB C 41.5 26.0-96.6 AB D 35.7 26.4-53.1 AB  
 .sup.1 Level required to protect 50% of the  
 population from exudative diathesis, expressed in terms of International units as  
 originally indicated for each preparation. EC.sub.50 values were computed from the  
 individual regressions for each vitamin E source using logprobit of response model.

CLAIMS:

6. The precipitated silica of claim 4 wherein about 50 weight percent of the particles are between 0.84 millimeters and 0.25 millimeters and the remainder are between about 0.25 millimeters and about 0.14 millimeters.

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## Hit List



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☐ 1. Document ID: US 6531485 B2

Using default format because multiple data bases are involved.

L4: Entry 1 of 18

File: USPT

Mar 11, 2003

US-PAT-NO: 6531485

DOCUMENT-IDENTIFIER: US 6531485 B2

TITLE: Prostaglandin agonists

DATE-ISSUED: March 11, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cameron; Kimberly O.	East Lyme	CT		
DaSilva-Jardine; Paul A.	Providence	RI		

US-CL-CURRENT: 514/307; 514/340, 514/354, 514/356, 514/364, 514/365, 514/381,  
514/415, 514/419, 514/439, 514/456, 514/464, 514/530, 514/570, 546/147, 546/268.4,  
546/269.1, 546/269.4, 548/131, 548/132, 548/204, 548/252, 548/253, 548/494,  
549/399, 549/447, 549/79, 560/118, 560/121, 562/503, 562/504

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RIMC	Draw D
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☐ 2. Document ID: US 6521757 B1

L4: Entry 2 of 18

File: USPT

Feb 18, 2003

US-PAT-NO: 6521757

DOCUMENT-IDENTIFIER: US 6521757 B1

TITLE: Preparation of fused polycyclic alkaloids by ring closure of azomethine ylides, novel compounds thereof and their use as chemotherapeutic agents

DATE-ISSUED: February 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Banwell; Martin Gerhardt	Aranda			AU
Flynn; Bernard Luke	Griffith			AU

US-CL-CURRENT: 546/47; 546/139, 546/62

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 3. Document ID: US 6472414 B1

L4: Entry 3 of 18

File: USPT

Oct 29, 2002

US-PAT-NO: 6472414

DOCUMENT-IDENTIFIER: US 6472414 B1

TITLE: Conformationally restricted aromatic inhibitors of microsomal triglyceride transfer protein and method

DATE-ISSUED: October 29, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Dickson; John K.	Eastampton	NJ		
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Magnin; David R.	Hamilton	NJ		
Poss; Michael A.	Lawrenceville	NJ		
Robl; Jeffrey A.	Newtown	PA		
Slusarchyk; William A.	Skillman	NJ		
Sulsky; Richard B.	Franklin Park	NJ		
Tino; Joseph A.	Lawrenceville	NJ		

US-CL-CURRENT: 514/395, 544/139, 544/182, 544/256, 544/311, 544/316, 546/265,  
546/280.1, 546/282.7, 546/297, 546/308, 546/337, 548/110, 548/132, 548/136,  
548/144, 548/171, 548/187, 548/221, 548/264.4, 548/307.1, 548/309.7, 548/324.1,  
548/507, 549/14, 549/218, 549/371, 549/388, 549/441, 558/83, 564/153, 564/155,  
564/172

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 4. Document ID: US 6455507 B1

L4: Entry 4 of 18

File: USPT

Sep 24, 2002

US-PAT-NO: 6455507

DOCUMENT-IDENTIFIER: US 6455507 B1

TITLE: Benzimidazole derivatives

DATE-ISSUED: September 24, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Drach; John Charles	Ann Arbor	MI		
Townsend; Leroy B.	Ann Arbor	MI		
Boyd, Jr.; Frank Leslie	Raleigh	NC		

Chamberlain; Stanley Dawes	Research Triangle Park	NC
Daluge; Susan Mary	Research Triangle Park	NC
Deaton; David Norman	Research Triangle Park	NC
Andersen; Marc W.	Raleigh	NC
Freeman; George Andrew	Research Triangle Park	NC

US-CL-CURRENT: 514/43; 514/248, 514/249, 514/254.07, 514/42, 514/45, 514/46,  
536/17.2, 536/17.3, 536/4.1, 548/469

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 5. Document ID: US 6303167 B1

L4: Entry 5 of 18

File: USPT

Oct 16, 2001

US-PAT-NO: 6303167

DOCUMENT-IDENTIFIER: US 6303167 B1

TITLE: Method of producing vitamin powders

DATE-ISSUED: October 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morris; Charles A.	Overland Park	KS		
Calhoon, Jr.; Francis W.	Olathe	KS		
Willis; Huey L.	Raymore	MO		

US-CL-CURRENT: 426/443; 424/442, 424/489, 426/442, 426/96, 514/458

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 6. Document ID: US 6277489 B1

L4: Entry 6 of 18

File: USPT

Aug 21, 2001

US-PAT-NO: 6277489

DOCUMENT-IDENTIFIER: US 6277489 B1

TITLE: Support for high performance affinity chromatography and other uses

DATE-ISSUED: August 21, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Abbott; Nicholas	Madison	WI		
Stroeve; Pieter	Davis	CA		
Dubrovsky; Timothy B.	Flemington	NJ		
Hou; Zhizhong	Davis	CA		

US-CL-CURRENT: 428/403; 427/217, 427/220, 428/404, 428/407, 428/450, 428/457,  
428/699, 428/701, 428/702, 435/287.1, 435/287.2, 435/287.9, 435/7.1, 435/7.7,  
435/7.8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. De
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☐ 7. Document ID: US 5994332 A

L4: Entry 7 of 18

File: USPT

Nov 30, 1999

US-PAT-NO: 5994332

DOCUMENT-IDENTIFIER: US 5994332 A

TITLE: Vitamin D analogues

DATE-ISSUED: November 30, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Calverley; Martin John	Herlev			DK

US-CL-CURRENT: 514/167; 552/653

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. De
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☐ 8. Document ID: US 5760246 A

L4: Entry 8 of 18

File: USPT

Jun 2, 1998

US-PAT-NO: 5760246

DOCUMENT-IDENTIFIER: US 5760246 A

TITLE: Conformationally restricted aromatic inhibitors of microsomal triglyceride transfer protein and method

DATE-ISSUED: June 2, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Biller; Scott A.	Hopewell	NJ	08525	
Dickson; John K.	Eastampton	NJ	08060	
Lawrence; R. Michael	Yardley	PA	19067	
Magnin; David R.	Hamilton	NJ	08690	
Poss; Michael A.	Lawrenceville	NJ	08468	
Robl; Jeffrey A.	Newtown	PA	18940	
Slusarchyk; William A.	Skillman	NJ	08558	
Sulsky; Richard B.	Franklin Park	NJ	08823	
Tino; Joseph A.	Lawrenceville	NJ	08648	

US-CL-CURRENT: 548/309.7; 544/139, 544/182, 544/256, 544/311, 544/316, 546/265,

546/270.1, 546/280.1, 546/282.7, 546/297, 546/308, 546/337, 548/132, 548/136,  
548/144, 548/160, 548/171, 548/187, 548/221, 548/264.4, 548/307.1, 548/324.1,  
548/507

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 9. Document ID: US 5370892 A

L4: Entry 9 of 18

File: USPT

Dec 6, 1994

US-PAT-NO: 5370892

DOCUMENT-IDENTIFIER: US 5370892 A

TITLE: Use of hydrophobic silica to control or prevent passive oil loss

DATE-ISSUED: December 6, 1994

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
El-Nokaly; Magda	Hamilton	OH		
Niehoff; Raymond L.	West Chester	OH		

US-CL-CURRENT: 426/531; 426/560, 426/601, 426/637, 426/804

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 10. Document ID: US 5206229 A

L4: Entry 10 of 18

File: USPT

Apr 27, 1993

US-PAT-NO: 5206229

DOCUMENT-IDENTIFIER: US 5206229 A

TITLE: Vitamin D analogues

DATE-ISSUED: April 27, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Calverley; Martin J.	Herlev			DK
Binderup; Lise	T.ang.strup			DK
Binderup; Ernst T.	T.ang.strup			DK

US-CL-CURRENT: 514/167; 552/652, 552/653, 568/715, 568/808, 568/816, 568/817,  
568/822, 568/838

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 11. Document ID: US 4950488 A

L4: Entry 11 of 18

File: USPT

Aug 21, 1990

US-PAT-NO: 4950488

DOCUMENT-IDENTIFIER: US 4950488 A

TITLE: Process of using precipitated amorphous silica or silicate as grinding aid  
for fish meal or fish food

DATE-ISSUED: August 21, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schweitzer; Uwe	Karlstein			DE
Hartwig; Peter	Ramsey	NJ		
Herz, Jr.; Robert T.	Norwalk	CT		
Steepey; Robert	Elmwood Park	NJ		

US-CL-CURRENT: 426/1; 426/643, 426/805, 426/807

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 12. Document ID: US 4820532 A

L4: Entry 12 of 18

File: USPT

Apr 11, 1989

US-PAT-NO: 4820532

DOCUMENT-IDENTIFIER: US 4820532 A

TITLE: Preparation of a low-dust free-flowing choline chloride powder

DATE-ISSUED: April 11, 1989

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bayer; Robert	Steinsfurt			DE
Boettger; Guenter	Bad Duerkheim			DE
Hiller; Rainer	Muenster			DE
Huber; Michael	Schifferstadt			DE
Koernig; Wolfgang	Leimen			DE
Fritz; Wolfgang	Karlsruhe			DE

US-CL-CURRENT: 426/74; 426/311, 426/471, 426/601

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 13. Document ID: US 4724207 A

L4: Entry 13 of 18

File: USPT

Feb 9, 1988



US-PAT-NO: 4724207  
DOCUMENT-IDENTIFIER: US 4724207 A

TITLE: Modified siliceous chromatographic supports

DATE-ISSUED: February 9, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hou; Kenneth C.	S. Glastonbury	CT		
Liao; Tung-Ping D.	Vernon	CT		

US-CL-CURRENT: 435/180, 210/656, 210/660, 210/692, 435/177, 435/181, 525/320,  
525/326.7, 525/327.3, 525/342, 530/416

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMIC	Draw D
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☐ 14. Document ID: US 4717561 A

L4: Entry 14 of 18

File: USPT

Jan 5, 1988

US-PAT-NO: 4717561  
DOCUMENT-IDENTIFIER: US 4717561 A  
**\*\* See image for Certificate of Correction \*\***

TITLE: Precipitated silica carrier for vitamins

DATE-ISSUED: January 5, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Krivak; Thomas G.	Akron	OH		
Heimbürger; Stanley A.	Pittsburgh	PA		
Dew; James T.	Sulphur	LA		

US-CL-CURRENT: 423/335; 423/339

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMIC	Draw D
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☐ 15. Document ID: US 4504516 A

L4: Entry 15 of 18

File: USPT

Mar 12, 1985

US-PAT-NO: 4504516  
DOCUMENT-IDENTIFIER: US 4504516 A

TITLE: Method for the preparation of powdered honey products, the products obtained according to the method and their use

DATE-ISSUED: March 12, 1985

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schanze; Rudolf	Neumarkt			DE

US-CL-CURRENT: 426/658; 426/443, 426/96, 426/97

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 16. Document ID: US 4271021 A

L4: Entry 16 of 18

File: USPT

Jun 2, 1981

US-PAT-NO: 4271021

DOCUMENT-IDENTIFIER: US 4271021 A

TITLE: Process for increasing the resistance to water of pre-coated preparations for chromatography

DATE-ISSUED: June 2, 1981

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hauck; Heinz E.	Frankfurt am Main			DE

US-CL-CURRENT: 210/198.3; 210/658, 427/341, 427/344

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 17. Document ID: US 4185088 A

L4: Entry 17 of 18

File: USPT

Jan 22, 1980

US-PAT-NO: 4185088

DOCUMENT-IDENTIFIER: US 4185088 A

TITLE: Non-adhesive ionene quaternary polymer compositions useful as bile acid sequestrants

DATE-ISSUED: January 22, 1980

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wagner; Arthur F.	Princeton	NJ		

US-CL-CURRENT: 424/497; 424/476, 424/78.08, 514/642

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 18. Document ID: AU 769187 B, WO 200027362 A1, AU 200017159 A, EP 1133279 A1,

US 6303167 B1, US 20020001622 A1, CN 1332627 A, MX 2001004607 A1, JP 2002529395 W,  
ZA 200103760 A, NZ 511549 A

L4: Entry 18 of 18

File: DWPI

Jan 22, 2004

DERWENT-ACC-NO: 2000-376272

DERWENT-WEEK: 200412

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TITLE: Production of dry free-flowing vitamin powder comprises blending redried cornstarch, silica and vitamin, used to promote health

INVENTOR: CALHOON, F W; MORRIS, C A ; WILLIS, H L

PRIORITY-DATA: 1998US-0188166 (November 9, 1998), 2001US-0933709 (August 22, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
AU 769187 B	January 22, 2004		000	A61K009/14
WO 200027362 A1	May 18, 2000	E	013	A61K009/14
AU 200017159 A	May 29, 2000		000	
EP 1133279 A1	September 19, 2001	E	000	A61K009/14
US 6303167 B1	October 16, 2001		000	A61K009/14
US 20020001622 A1	January 3, 2002		000	A61K009/14
CN 1332627 A	January 23, 2002		000	A61K009/14
MX 2001004607 A1	July 1, 2001		000	A61K009/14
JP 2002529395 W	September 10, 2002		018	A61K031/355
ZA 200103760 A	October 30, 2002		029	A61K000/00
NZ 511549 A	August 29, 2003		000	A61K009/14

INT-CL (IPC): A61 K 0/00; A61 K 9/14; A61 K 9/50; A61 K 31/355; A61 K 31/375; A61 K 31/4188; A61 K 31/4415; A61 K 31/506 ; A61 K 31/519; A61 K 31/59; A61 K 31/7004; A61 K 31/7056; A61 K 47/04; A61 K 47/36; A61 P 3/02

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RIIDC	Drawings
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☐ 1. Document ID: US 6303167 B1

Using default format because multiple data bases are involved.

L5: Entry 1 of 5

File: USPT

Oct 16, 2001

US-PAT-NO: 6303167

DOCUMENT-IDENTIFIER: US 6303167 B1

TITLE: Method of producing vitamin powders

DATE-ISSUED: October 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morris; Charles A.	Overland Park	KS		
Calhoon, Jr.; Francis W.	Olathe	KS		
Willis; Huey L.	Raymore	MO		

US-CL-CURRENT: 426/443; 424/442, 424/489, 426/442, 426/96, 514/458



☐ 2. Document ID: US 5962469 A

L5: Entry 2 of 5

File: USPT

Oct 5, 1999

US-PAT-NO: 5962469

DOCUMENT-IDENTIFIER: US 5962469 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Cyclic nitrones

DATE-ISSUED: October 5, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thomas; Craig E.	West Chester	OH		
Fevig; Thomas L.	West Chester	OH		
Bowen; Stephen M.	Cincinnati	OH		
Farr; Robert A.	Loveland	OH		
Carr; Albert A.	Cincinnati	OH		
Janowick; David A.	Beach Park	IL		

US-CL-CURRENT: 514/301; 514/278, 514/290, 514/302, 514/307, 514/309, 546/101,  
546/110, 546/114, 546/115, 546/116, 546/139, 546/141, 546/18

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 3. Document ID: US 4745116 A

L5: Entry 3 of 5

File: USPT

May 17, 1988

US-PAT-NO: 4745116

DOCUMENT-IDENTIFIER: US 4745116 A

TITLE: 2-oxy-4H-3,1-benzoxazin-4-ones and related compounds and pharmaceutical use

DATE-ISSUED: May 17, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Krantz; Alexander	Toronto			CA
Spencer; Robin	Mississauga			CA
Tam; Tim	Mississauga			CA
Liak; Teng J.	Mississauga			CA

US-CL-CURRENT: 514/230.5; 544/93, 987/66

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 4. Document ID: US 4082858 A

L5: Entry 4 of 5

File: USPT

Apr 4, 1978

US-PAT-NO: 4082858

DOCUMENT-IDENTIFIER: US 4082858 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Sweetening compound, method of recovery, and use thereof

DATE-ISSUED: April 4, 1978

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morita; Toyoshige	Takatsuki			JA
Fujita; Isamu	Kashihara			JA
Iwamura; Junichi	Yao			JA

US-CL-CURRENT: 426/597; 426/658, 426/660, 514/34, 536/18.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 5. Document ID: AU 769187 B, WO 200027362 A1, AU 200017159 A, EP 1133279 A1, US 6303167 B1, US 20020001622 A1, CN 1332627 A, MX 2001004607 A1, JP 2002529395 W, ZA 200103760 A, NZ 511549 A

L5: Entry 5 of 5

File: DWPI

Jan 22, 2004

DERWENT-ACC-NO: 2000-376272

DERWENT-WEEK: 200412

COPYRIGHT 2004 DERWENT INFORMATION LTD

TITLE: Production of dry free-flowing vitamin powder comprises blending redried cornstarch, silica and vitamin, used to promote health

INVENTOR: CALHOON, F W; MORRIS, C A ; WILLIS, H L

PRIORITY-DATA: 1998US-0188166 (November 9, 1998), 2001US-0933709 (August 22, 2001)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
AU 769187 B	January 22, 2004		000	A61K009/14
WO 200027362 A1	May 18, 2000	E	013	A61K009/14
AU 200017159 A	May 29, 2000		000	
EP 1133279 A1	September 19, 2001	E	000	A61K009/14
US 6303167 B1	October 16, 2001		000	A61K009/14
US 20020001622 A1	January 3, 2002		000	A61K009/14
CN 1332627 A	January 23, 2002		000	A61K009/14
MX 2001004607 A1	July 1, 2001		000	A61K009/14
JP 2002529395 W	September 10, 2002		018	A61K031/355
ZA 200103760 A	October 30, 2002		029	A61K000/00
NZ 511549 A	August 29, 2003		000	A61K009/14

INT-CL (IPC): A61 K 0/00; A61 K 9/14; A61 K 9/50; A61 K 31/355; A61 K 31/375; A61 K 31/4188; A61 K 31/4415; A61 K 31/506 ; A61 K 31/519; A61 K 31/59; A61 K 31/7004; A61 K 31/7056; A61 K 47/04; A61 K 47/36; A61 P 3/02

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMIC	Draw D
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L3 and cornstarch

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L7: Entry 5 of 6

File: USPT

Oct 14, 1986

DOCUMENT-IDENTIFIER: US 4617294 A

TITLE: Animal feed supplement

Brief Summary Text (5):

It has now been discovered that certain amorphous precipitated silica is particularly suitable as an inert carrier for vitamins fed to livestock as a nutritional supplement. Such precipitated silica is a free-flowing, substantially dust free, granular material having a density of at least about 14 pounds per cubic foot, (224 kg/m.sup.3) a principal particle size of between about 0.14 millimeters and about 0.84 millimeters, a surface area of from about 140 to about 160 square meters per gram and an oil absorption of from about 160 to about 220 milliliters per 100 grams of silica. More particularly, the aforesaid amorphous precipitated silica will have a density of between about 14 and 18 pounds per cubic foot, (224-288 kg/m.sup.3) preferably between about 15 and about 17 pounds per cubic foot (240-272 kg/m.sup.3).

Brief Summary Text (6):

Amorphous precipitated silica used as an inert carrier for vitamins in accordance with the present invention is free flowing and substantially dust-free. By substantially dust-free is meant that the silica contains less than 4, preferably less than 1, weight percent of material less than 200 Tyler mesh. A 200 Tyler mesh screen has an opening of 0.074 millimeters. Preferably, less than 5 weight percent of the silica will be less than 100 Tyler mesh. A 100 Tyler mesh screen has an opening of 0.147 millimeters. The particles of the silica will principally range between about 0.84 millimeters (sub 20 Tyler mesh) and 0.14 millimeters (plus 100 Tyler mesh). Typically less than 1 weight percent of the silica is greater than 0.84 millimeters (plus 20 Tyler mesh). Hence, at least about 94 weight percent of the particles are within the aforesaid range. The distribution of the particles within the aforesaid range is not critical. However, the products typically will have about 50 percent of the particles between -20 Tyler mesh and +60 Tyler mesh with the remainder between about -60 Tyler mesh and +100 Tyler mesh.

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## Hit List



Search Results - Record(s) 1 through 6 of 6 returned.

☐ 1. Document ID: US 6590055 B2

Using default format because multiple data bases are involved.

L7: Entry 1 of 6

File: USPT

Jul 8, 2003

US-PAT-NO: 6590055

DOCUMENT-IDENTIFIER: US 6590055 B2

TITLE: Electrical devices from polymer resins prepared with ionic catalysts

DATE-ISSUED: July 8, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Brant; Patrick	Seabrook	TX		

US-CL-CURRENT: 526/348; 174/110SR, 428/36.8, 428/461, 428/462, 526/129, 526/130, 526/134, 526/160, 526/348.6



☐ 2. Document ID: US 6562920 B2

L7: Entry 2 of 6

File: USPT

May 13, 2003

US-PAT-NO: 6562920

DOCUMENT-IDENTIFIER: US 6562920 B2

TITLE: Processes for the preparation polyolefin resins using supported ionic catalysts

DATE-ISSUED: May 13, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Brant; Patrick	Seabrook	TX		

US-CL-CURRENT: 526/129; 526/130, 526/134, 526/160, 526/281, 526/339, 526/347, 526/348, 526/348.2, 526/348.6





☐ 3. Document ID: US 5747003 A

L7: Entry 3 of 6

File: USPT

May 5, 1998

US-PAT-NO: 5747003

DOCUMENT-IDENTIFIER: US 5747003 A

TITLE: Amorphous precipitated silica abrasive

DATE-ISSUED: May 5, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mohnot; Shantilal M.	Murrysville	PA		
Swift; Harold E.	Gibsonia	PA		
Krivak; Thomas G.	Irwin	PA		
Fear; Robert H.	Pittsburgh	PA		
Randall; Laura M.	Pittsburgh	PA		
Jones; Laurence E.	Pittsburgh	PA		

US-CL-CURRENT: 424/49; 106/481, 106/482, 106/492, 423/335, 423/338, 423/339,  
501/133, 502/232, 502/233, 502/407

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMIC	Drawings
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☐ 4. Document ID: US 4717561 A

L7: Entry 4 of 6

File: USPT

Jan 5, 1988

US-PAT-NO: 4717561

DOCUMENT-IDENTIFIER: US 4717561 A

**\*\* See image for Certificate of Correction \*\***

TITLE: Precipitated silica carrier for vitamins

DATE-ISSUED: January 5, 1988

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Krivak; Thomas G.	Akron	OH		
Heimbürger; Stanley A.	Pittsburgh	PA		
Dew; James T.	Sulphur	LA		

US-CL-CURRENT: 423/335; 423/339

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMIC	Drawings
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☐ 5. Document ID: US 4617294 A

L7: Entry 5 of 6

File: USPT

Oct 14, 1986

US-PAT-NO: 4617294

DOCUMENT-IDENTIFIER: US 4617294 A

TITLE: Animal feed supplement

DATE-ISSUED: October 14, 1986

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Krivak; Thomas G.	Akron	OH		
Heimbürger; Stanley A.	Pittsburgh	PA		
Dew; James T.	Sulphur	LA		

US-CL-CURRENT: 514/52; 426/72, 426/73, 514/167, 514/356, 514/458, 514/725, 514/769, 514/770

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KOMC	Draw. De
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☐ 6. Document ID: US 4292198 A

L7: Entry 6 of 6

File: USPT

Sep 29, 1981

US-PAT-NO: 4292198

DOCUMENT-IDENTIFIER: US 4292198 A

TITLE: Heterogeneous catalyst on the basis of an organometallic complex

DATE-ISSUED: September 29, 1981

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gerritsen; Leendert A.	Hendrik Ido Ambacht			NL
Scholten; Joseph J. F.	Sittard			NL

US-CL-CURRENT: 502/158; 502/159, 502/161, 568/454

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KOMC	Draw. De
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Terms	Documents
L6 and free\$flowing	6

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L10: Entry 25 of 34

File: USPT

May 28, 1985

DOCUMENT-IDENTIFIER: US 4519961 A

TITLE: Production of dry powders of substances which are sensitive to oxidation

Abstract Text (1):

A process for pulverizing substances which are sensitive to oxidation, in particular oily substances, by dispersing oil-soluble substances, e.g. vitamins, carotinoids, pharmaceutically active compounds or aromas, in an aqueous solution of a film-forming colloid, which constitutes the continuous phase of the dispersion, with the addition of one or more substances from the group comprising the mono-, di- and polysaccharides, atomizing the dispersion, in a spray tower, in the presence of a spraying assistant and collecting the resulting particles in a fluidized bed, wherein, as the spraying auxiliary, a hydrophobic silica or a metal salt of a higher fatty acid is introduced above the fluidized bed and distributed uniformly in the spraying space, at a temperature at which the colloid of the atomized particles has not yet solidified, and the assistant-laden particles, colloid material of which essentially has not yet gelatinized, is collected in a fluidized bed, and dried therein in a conventional manner.

Brief Summary Text (2):

There are various spraying processes for converting substances which are sensitive to oxidation, e.g. vitamins A, E and D or carotinoids, into dry, free-flowing powders which are protected against oxidation. The powder should consist of particles having a well formed surface and a size of 100-600 .mu.m, the maximum of the particle size distribution being at about 250 .mu.m. Powders having this particle size distribution ensure adequate protection of the active compound, and the number of particles per unit weight is still high enough so that during further processing in the pharmaceutical, food and feedstuff industries it is possible to obtain homogeneous mixtures of these products with other substances, with food or with feedstuffs.

Brief Summary Text (4):

In particular, it has been disclosed, for example in German Pat. No. 1,035,319, that a dispersion of an oily vitamin in a large excess of a starch powder with a water content below 8% can be atomized. The dry starch powder removes sufficient water from the particles so that they solidify. A great disadvantage of this process is that about 15% of the amount of starch remains adhering to the surface of the particles, and the excess starch must be separated off so that, after it has been dried, it may be recycled to the process.

Brief Summary Text (5):

In another process, which is described in Swiss Pat. No. 488,455, the starch is replaced by a mixture of water-absorbing inorganic substances and inorganic substances which do not absorb water, in order to eliminate the danger of explosion which arises from the presence of the finely divided starch. For optimum results, as much as a 20-fold excess of the carrier powder is required in this case.

Brief Summary Text (11):

We have found that this object is achieved, in accordance with the invention, by dispersing an oil-soluble substance, e.g. a vitamin, a carotinoid, a pharmaceutical active compound or an aroma, in an aqueous solution of a film-forming colloid,

which constitutes the continuous phase of the dispersion, with the addition of one or more substances from the group comprising the mono-, di- and polysaccharides, atomizing the dispersion, in a spray tower, in the presence of a spraying auxiliary, and collecting the resulting particles in a fluidized bed, wherein, as the spraying assistant, from 0.02 to 0.15 times the amount by weight, based on the dispersion, of a hydrophobic silica or a metal salt of a higher fatty acid, for example of 16 to 18 carbon atoms, or a mixture of such salts with silica, is introduced (in the absence of significant amounts of other conventional spraying auxiliaries, e.g. starch powder) above the fluidized bed and distributed uniformly in the spraying space, at a temperature at which the colloid which is present in the atomized particles and which may or may not gelatinize has not yet solidified, and the assistant-laden particles, the colloid material of which essentially has not gelatinized, is collected in a fluidized bed, and dried therein in a conventional manner.

Brief Summary Text (15):

Suitable hydrophobic spraying auxiliaries are silanized silicas, as described in Die Muhle und Mischfuttertechnik 114 (1977), 3, and metal salts of higher fatty acids of 16 to 18 carbon atoms, e.g. calcium stearate and magnesium stearate, or mixtures of these salts with silica. As a result of directly introducing the particles into the spraying zone, they are substantially free of mechanical load, to which they would be subjected, for example, by a carrier-containing fluidized bed. The thin hydrophobic film of the spraying assistant, which film is produced during the spraying, stabilizes the particles sufficiently to prevent them from combining when they come into contact with one another before they have solidified, and thereby permits the particles to be dried directly in a downstream fluidized bed dryer.

Detailed Description Text (5):

14 parts of gelatin (100 Bloom) are stirred into a solution of 56.4 parts of glucose syrup (80% solids content) in 49 parts of water, and left to swell for 1 hour. Thereafter, 13.6 parts of corn starch are added, and the mixture is emulsified at 61.degree. - 63.degree. C. with 24.9 parts of vitamin A acetate (2.21 million IU/g) stabilized with ethoxy-quin. The resulting dispersion, which has a viscosity of 104 mPas at 60.degree. C., is atomized at from 80.degree. to 90.degree. C. and under a pressure of 60 bar. 10.5 kg/hour of hydrophobic silica (Sipernat D17) are introduced into the spraying zone during spraying. Spraying is carried out at a rate of 162 kg/hour of dispersion. After drying in a fluidized bed at 28.degree. - 38.degree. C., a powder of the following composition is obtained:

Detailed Description Text (10):

The procedure described in Example 1 is followed, except that the dispersion, having a viscosity of 1,196 mPas (60.degree. C.), is atomized at 62.degree. C. under atmospheric pressure, using an atomizing disc (5) at 24,300 rpm. Spraying is carried out at a rate of 77 kg/hour of dispersion, 4.5 kg/hour of hydrophobic silica (Sipernat D 17) being employed. The vitamin content of the powder is 591,000 IU/g, and the sieve analysis in accordance with ASTM is as follows:

Detailed Description Text (16):

2.8 parts of acid-coagulated casein (110 mesh) are stirred into a solution, at 63.degree. C., of 15 parts of water and 39.5 parts of glucose syrup (80% solids content). The pH is brought to 7 by the addition of 10% strength sodium hydroxide solution. Thereafter, the mixture is emulsified with 0.25 part of fatty acid monoglyceride and 12.8 parts of vitamin A acetate (2.18 million IU/g), stabilized with ethoxyquin. The dispersion, having a viscosity of 202 mPas at 60.degree. C., is atomized at from 80.degree. to 90.degree. C. under a pressure of 50 bar, by means of a single-material nozzle. 18.5 kg/hour of hydrophobic silica (Sipernat D 17) are introduced into the spraying zone during spraying. The dispersion is sprayed at a rate of 150 kg/hour. The product is dried in a fluidized bed dryer at from 25.degree. to 33.degree. C. in the course of 7 hours. The vitamin content of

the powder is 542,000 IU/g; sieve analysis in accordance with ASTM gives:

Detailed Description Text (19):

9 parts of gelatin are stirred into a solution of 50 parts of water and 25 parts of dextrose, 9 parts of starch are added, and the mixture is then heated to 62.degree. C. 7.5 parts of a cantaxanthin mixture with vegetable oil and ethoxyquin (active compound content 70%) are dispersed in this mixture, the viscosity of the dispersion being 163 mPas at 60.degree. C. The dispersion is introduced into the spraying space at 62.degree. C., 11 kg/hour of hydrophobic silica (Sipernat D 17) being metered in, and is sprayed at a rate of 295 kg/hour. Drying is carried out in a fluidized bed at from 28.degree. to 30.degree. C. The resulting dry powder contains 9.8% of active ingredient and gives the following ASTM sieve analysis:

CLAIMS:

1. A process for converting an oxygen-sensitive, oil soluble substance into a dry, free-flowing, oxygen-insensitive powder, which comprises:

(a) dispersing said oxygen-sensitive, oil soluble substance in an aqueous solution which contains a film-forming colloid and one or more compounds selected from the group consisting of a mono-, di-, and poly-saccharide to form a dispersion wherein said colloid constitutes the continuous phase;

(b) atomizing said dispersion within the spraying zone of a spray tower to form discrete particles therefrom;

(c) causing said particles, as they form, to contact a hydrophobic spray assistant selected from the group consisting of silanized silica, a metal salt of a higher fatty acid and mixtures thereof in the absence of significant amounts of starch powder, with the newly formed particles being at a temperature during such contact which precludes solidification; said contact being effected by maintaining a uniform distribution of said spray assistant in the spraying zone of said spray tower during atomization of said dispersion therein to form said particles, with the spray assistant being supplied to the spraying zone in an amount of from about 0.02 to 0.15 parts by weight based on the weight of said dispersion;

(d) collecting said particles laden with said hydrophobic spray assistant in a fluidized bed downstream from the spraying zone of said spray tower with said bed being maintained in a fluidized state by an upwardly directed flow of dry air; and

(e) causing said particles to solidify and dry in said fluidized bed by means of the upward flow of dry air through the bed.

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## Hit List



Search Results - Record(s) 31 through 34 of 34 returned.

☐ 31. Document ID: US 3639168 A

Using default format because multiple data bases are involved.

L10: Entry 31 of 34

File: USPT

Feb 1, 1972

US-PAT-NO: 3639168

DOCUMENT-IDENTIFIER: US 3639168 A

TITLE: DIRECT COMPRESSION VEHICLES

DATE-ISSUED: February 1, 1972

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Monti; Anthony	Irvington	NY		
Troy; John P.	Hicksville	NY		
Broeg; Charles B.	Short Hills	NJ		

US-CL-CURRENT: 127/29; 127/63, 264/122, 424/606, 424/686, 424/687, 424/690,  
424/695, 424/720, 424/722, 424/723, 426/650 , 514/769, 514/777, 8/526

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RVWC	Drawings
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☐ 32. Document ID: AU 769187 B, WO 200027362 A1, AU 200017159 A, EP 1133279 A1, US 6303167 B1, US 20020001622 A1, CN 1332627 A, MX 2001004607 A1, JP 2002529395 W, ZA 200103760 A, NZ 511549 A

L10: Entry 32 of 34

File: DWPI

Jan 22, 2004

DERWENT-ACC-NO: 2000-376272

DERWENT-WEEK: 200412

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TITLE: Production of dry free-flowing vitamin powder comprises blending redried cornstarch, silica and vitamin, used to promote health

INVENTOR: CALHOON, F W; MORRIS, C A ; WILLIS, H L

PRIORITY-DATA: 1998US-0188166 (November 9, 1998), 2001US-0933709 (August 22, 2001)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>AU 769187 B</u>	January 22, 2004		000	A61K009/14

<u>WO 200027362 A1</u>	May 18, 2000	E	013	A61K009/14
<u>AU 200017159 A</u>	May 29, 2000		000	
<u>EP 1133279 A1</u>	September 19, 2001	E	000	A61K009/14
<u>US 6303167 B1</u>	October 16, 2001		000	A61K009/14
<u>US 20020001622 A1</u>	January 3, 2002		000	A61K009/14
<u>CN 1332627 A</u>	January 23, 2002		000	A61K009/14
<u>MX 2001004607 A1</u>	July 1, 2001		000	A61K009/14
<u>JP 2002529395 W</u>	September 10, 2002		018	A61K031/355
<u>ZA 200103760 A</u>	October 30, 2002		029	A61K000/00
<u>NZ 511549 A</u>	August 29, 2003		000	A61K009/14

INT-CL (IPC): A61 K 0/00; A61 K 9/14; A61 K 9/50; A61 K 31/355; A61 K 31/375; A61 K 31/4188; A61 K 31/4415; A61 K 31/506; A61 K 31/519; A61 K 31/59; A61 K 31/7004; A61 K 31/7056; A61 K 47/04; A61 K 47/36; A61 P 3/02

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 33. Document ID: US 5234695 A

L10: Entry 33 of 34

File: DWPI

Aug 10, 1993

DERWENT-ACC-NO: 1993-264575

DERWENT-WEEK: 199333

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TITLE: Free-flowing, water dispersible vitamin-E compsn. - comprises alpha to copherol polyethylene glycol ester and material contg fatty acid ester of glycerine, used in feed supplements

INVENTOR: HOBBS, H K; HUFFAKER, J E ; PAPAS, A M ; TAGGART, E M

PRIORITY-DATA: 1990US-0556518 (July 24, 1990)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>US 5234695 A</u>	August 10, 1993		006	A61K009/14

INT-CL (IPC): A61K 9/14; A61K 31/355

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 34. Document ID: EP 74050 A, CA 1188572 A, DE 3135329 A, DE 3267815 G, DK 8203939 A, EP 74050 B, JP 58055412 A, JP 92028684 B, US 4519961 A

L10: Entry 34 of 34

File: DWPI

Mar 16, 1983

DERWENT-ACC-NO: 1983-27733K

DERWENT-WEEK: 198312

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TITLE: Prodn. of free-flowing powders of oxidn.-sensitive materials - e.g. vitamin (s), carotenoid(s) or aromas by spraying a dispersion in a colloidal soln. into a catching powder



INVENTOR: GRAFEN, P; SCHUMACHER, H

PRIORITY-DATA: 1981DE-3135329 (September 5, 1981)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>EP 74050 A</u>	March 16, 1983	G	012	
<u>CA 1188572 A</u>	June 11, 1985		000	
<u>DE 3135329 A</u>	March 24, 1983		000	
<u>DE 3267815 G</u>	January 16, 1986		000	
<u>DK 8203939 A</u>	May 30, 1983		000	
<u>EP 74050 B</u>	December 4, 1985	G	000	
<u>JP 58055412 A</u>	April 1, 1983		000	
<u>JP 92028684 B</u>	May 15, 1992		005	A61K009/14
<u>US 4519961 A</u>	May 28, 1985		000	

INT-CL (IPC): A23L 1/30; A61J 5/00; A61K 9/14; A61K 9/16; B01D 1/00; B01J 13/02;  
B05D 7/00

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RIIDC	Draw D
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File: USPT

Dec 4, 1984

DOCUMENT-IDENTIFIER: US 4486435 A

TITLE: Spray-dried vitamin powders using hydrophobic silicaAbstract Text (1):

Encapsulated vitamin powders coated with a hydrophobic silica have improved free-flowing properties making these powders more suitable for direct tableting preparation.

Brief Summary Text (3):

This invention relates to non-agglomerated, free-flowing, vitamin powders containing a coating of hydrophobic silica.

Brief Summary Text (7):

Vitamin-containing aqueous colloid beads have been prepared utilizing an aqueous solution of gelatin as an encapsulating agent. The aqueous gelatin coating around the vitamin is formed by spraying droplets of the aqueous gelatin-vitamin mixture into a cooling tower and collecting at the base of the tower in admixture with the resulting powder a water-absorbing powder such as powdered silica gel. The gelatin-coated vitamin is thereafter separated from the water-absorbing powder, as disclosed in U.S. Pat. No. 3,445,563.

Brief Summary Text (8):

The vitamin-containing powders of the prior art can be improved in free-flowing properties by spray-drying droplets of vitamin and encapsulating agent containing a water-insoluble carrier in the presence of a hydrophobic silica.

Brief Summary Text (10):

Encapsulated vitamin-containing, spray-dried, non-caking powders coated with a hydrophobic silica provide improved free-flowing powders as compared with those in the prior art.

Brief Summary Text (11):

The coated, free-flowing, non-hydroscopic, non-agglomerated vitamin powders suitable for the preparation of tablets by direct compression are prepared by:

Brief Summary Text (12):

spraying into a spray-dryer chamber droplets of a composition wherein said vitamin is present as a dispersion, a solution, or as an emulsion in an aqueous medium containing an encapsulating agent and wherein a water-insoluble carrier is also present in said aqueous medium, to produce a spray-dried powder which is dried in the presence of a dry particulate absorbent material. During spray-drying there is metered into said chamber, in a concentration of about 0.2 to about 2 percent by weight, based upon the weight of said spray-dried composition, a hydrophobic silica.

Brief Summary Text (14):

Vitamin powders which are free-flowing and non-agglomerated can be prepared by the process of the invention. These powders are suitable for direct compression preparation of tablets and are particularly desirable in such procedures because of the improved flow properties and the reduction in sticking of the powder to the

tablet press table, feed frame, and hopper.

Brief Summary Text (15):

It has been found that non-agglomerated, free-flowing, vitamin powders can be prepared by spray-drying a mixture of the vitamin present in an aqueous emulsion or in an aqueous dispersion containing an encapsulating agent or binder. Introducing a hydrophobic silica into the spray-drying chamber during the drying process, which is deposited upon the partially dried encapsulated particle as an outer shell, improves flowability. The particles of the aqueous composition containing a vitamin also can contain various adjuvants which are conventional in vitamin-containing powders. Such adjuvants can be lubricant compounds, binders, preservative compounds, fillers, and water-insoluble retarding agents. Said agents are resistant to disintegration in the gastro-intestinal tract. They are added in order to provide sustained release properties in the tablet prepared from the vitamin-containing powder.

Brief Summary Text (17):

As the encapsulating agent, filler or binder, generally any water-soluble starch, corn syrup, dextrin or pregelatinized starch which is at least partially soluble in water at ambient temperature can be employed in preparing the powder compositions of this invention. For example, there can be used as an encapsulating agent or binder the pregelatinized, modified and stabilized waxy maize starch which is marketed by the National Starch and Chemical Corporation under the trade name "Instant Clear Gel." In addition, pregelatinized corn starch marketed by the Hubinger Company under the trade name "OK Pre-Gel" can be used. Other binders suitable for use are pregelatinized food starch, refined from tapioca and marketed under the trade name "Instant Gel"; stable, modified amylopectin marketed under the trade name "Kosol"; a low viscosity tapioca dextrin marketed under the trade name "Crystal Gum"; dextrinized corn starch marketed under the trade name "Purity Glaze"; maltodextrin marketed under the trade name "Maltrin" M040 by Grain Processing Corporation. The encapsulating agent which is preferred for use in the invention as maltodextrin.

Brief Summary Text (19):

A water-insoluble carrier may be used in the practice of this invention. These carriers must be non-toxic and inert to the other ingredients used in forming the vitamin powders of the invention. The carriers provide a nucleus upon which the vitamin and retarding agent, if used, may be carried so as to provide in the subsequent formation of a tablet an acceptable size and weight thereof. Suitable carriers can be inorganic or organic. Representative examples of suitable carriers are the alkaline earth metal sulfates such as calcium sulfate, the alkaline earth metal phosphates such as dicalcium phosphate, and organic carriers such as oyster shell flour, corn starch and rice starch. Carrier materials other than those mentioned above can be equally effective. It is not so much the chemical composition of the carrier but rather their physical properties which are critical in the preparation of the vitamin powders of the invention.

Brief Summary Text (20):

Of critical importance in the preparation of the vitamin powders of the invention is the utilization of ultra-fine particle size materials which are capable of coating the partially dried, encapsulated vitamin component. A coating of hydrophobic silica on the particles of the vitamin powders of the invention has been found to provide the desired properties. The hydrophobic silicas are substantially superior to those fine particle size silicas which are characterized as hydrophilic. The hydrophobic silicas are a special form of silica made from silica gel, precipitated silica or fumed silica by standard treatments known in the art. Such treatments involve the use of silanes or polysiloxanes to provide the desired hydrophobicity. It is also known to provide hydrophobic silicas by treatment of silica gel, precipitated silica or fumed silica with esterified coatings derived from high-boiling alcohols. Other fine particle size materials

characterized as hydrophobic may be as effective as the hydrophobic silicas since it is not so much the chemical composition of the fine particle size coating composition which is critical to this process but rather their physical properties. Generally, the coating material must be substantially insoluble in water, have a primary particle size of about 0.01 microns to about 0.04 microns, and have a surface area of about 90 to about 130 square meters per gram.

Brief Summary Text (22):

In addition, conventional tableting lubricants can be added to the vitamin emulsion or dispersion prior to spray-drying. It is more conventional to add these lubricants to the vitamin powders prior to the tableting operation. Such conventional lubricants as calcium stearate, stearic acid or magnesium stearate, or mixtures thereof, can be used. Any of the aforementioned lubricants can also be used in combination with talc or corn starch to provide additional advantageous properties upon use of the vitamin powders of the invention directly in the preparation of tablets. Generally, about 0.25 percent to about 10 percent by weight of lubricant based upon the dry weight of the vitamin powder of the invention is utilized.

Brief Summary Text (25):

The improved flowability characteristics of the vitamin powders of this invention were unexpected. The coating of partially spray-dried encapsulated vitamin by the introduction into the spray chamber of ultra-fine absorbents such as silicic acid, silicon dioxide or various silicates is known. However, it was not anticipated that the introduction into the spray chamber of an ultra-fine particle size hydrophobic silica would provide the unexpected, substantially improved flow properties of the vitamin powder obtained thereby, as compared with those vitamin powders of the prior art. It was especially unexpected that the substantially improved flow properties would be obtained in a powder which is non-agglomerated, as compared to those vitamin powders of the prior art which are intentionally prepared as agglomerated powders in order to improve flow properties by this means. Generally the vitamin powders of the invention contain a hydrophobic silica coating in the amount by weight of about 0.2 percent to about 2.0 percent, preferably about 0.5 percent to about 1.5 percent, and most preferably about 0.8 percent to about 1.2 percent, all based upon the weight of said powders.

Brief Summary Text (30):

Hydrophobic silica--about 0.2 to about 2 percent by weight, preferably about 0.5 percent to about 1.5 percent by weight.

Detailed Description Text (4):

In a five-gallon tank heated utilizing a hot plate, 19.9 parts by weight of a water-soluble corn starch identified as a maltodextrin and sold under the trade name "Maltrin" M040 by the Grain Processing Corporation were added with stirring to 42.8 parts by weight of water maintained at a temperature of 60.degree. C. while constantly stirring the mixture. Thereafter, 31.3 parts by weight of a commercially available riboflavin powder having a purity of about 93 percent by weight were added to the mixture to yield a muddy-yellow suspension of riboflavin. Calcium sulfate dihydrate in the amount of 6 parts by weight was next added and dispersed in the mixture.

Detailed Description Text (5):

Utilizing a laboratory size spray-drying apparatus, having a variable speed atomizing wheel, feed tanks, pump and silica screw feeder, the previously prepared riboflavin suspension was metered to the atomizing wheel operated at about 23,000 rpm. A silica cloud was maintained within the spray-dryer by screw feeding a hydrophobic synthetic silica, sold under the trademark SIPERNAT.RTM. D17, so as to provide a coating on the spray-dried particles. This silica coating constitutes about 1 to 2 percent by weight of the total weight of the particles.

Detailed Description Text (9):

Following the procedure of Example 1, a spray-dried riboflavin powder was prepared. As a substitute for the hydrophobic silica utilized in Example 1, a hydrophilic silica was utilized. The silica was a type sold under the trademark AEROSIL.RTM.200. The resulting spray-dried riboflavin powder obtained was a brown, free-flowing, non-agglomerated, static-free powder having a bulk density of 0.65 to about 0.77 grams per cubic centimeter and a moisture content of 2.74 percent by weight. The hygroscopicity was 3.5 percent by weight after exposure to a relative humidity of 65 percent and a temperature of 37.degree. C. for a period of 45 hours. No caking was observed under these conditions. Evaluation for flowability utilizing the FLODEX method described above provided a flow index of 63.

Detailed Description Text (17):

In spray-drying the above suspension of riboflavin, the maintenance of a silica cloud within the spray dryer, as shown in Examples 1 and 2, was not utilized. The resulting spray-dried riboflavin powder is a brown, non-agglomerated, static-free powder having a bulk density of 0.6 to 0.73 grams per cubic centimeter, a hygroscopicity of 3.4 percent by weight after exposure to a 65 percent relative humidity at a temperature of 37.degree. C. for a period of 45 hours. It is noted that the powder solidified subsequent to exposure under these temperatures and humidity conditions, as compared to the riboflavin powders of Examples 1 and 2 in which no solidification took place. The flowability measured using the FLODEX method showed an index of 71.

## CLAIMS:

1. In a process for preparing coated, non-agglomerated, spray-dried vitamin powders suitable for the preparation of tablets by direct compression comprising:

A. spraying into a spray-dryer chamber droplets of a composition containing a vitamin present as a dispersion, solution, or as an emulsion in an aqueous medium containing an encapsulating agent and wherein a water-insoluble carrier is optionally present in said aqueous medium, to produce a spray-dried powder which is dried in the presence of a dry particulate absorbent material, the improvement comprising:

B. metering into said chamber, in a concentration of about 0.2 to about 2 percent by weight, based upon the weight of said spray-dried vitamin powder, a hydrophobic silica.

2. The process of claim 1 wherein said vitamin is present as a dispersion in said aqueous medium containing said encapsulating agent comprising a water-soluble starch, dextrin, corn syrup, or mixtures thereof.

3. The process of claim 2 wherein said water-insoluble carrier is present and selected from the group consisting of calcium sulfate, dicalcium phosphate, oyster shell flour, corn starch, rice starch, and mixtures thereof.

5. The process of claim 4 wherein said non-agglomerated powder has the following composition on a dry basis:

riboflavin--about 45 to about 60 percent by weight,

encapsulating agent--about 20 to about 52 percent by weight,

calcium sulfate dihydrate--about 2 to about 18 percent by weight,

hydrophobic silica--about 0.2 to about 2 percent by weight.

6. A spray-dried, free-flowing, non-agglomerated, non-caking, non-hygroscopic

vitamin powder composition comprising in percent by weight based upon the total weight of said powder, about 45 to about 60 percent vitamin, about 10 to about 60 percent of an encapsulating agent, optionally about 2 to about 18 percent of a water-insoluble, carrier, and about 0.2 to about 2 percent of a hydrophobic silica.

7. The composition of claim 6 wherein said encapsulating agent is selected from the group consisting of a water-soluble starch, dextrin, corn syrup and mixtures thereof.

9. The composition of claim 7 wherein said water-insoluble carrier is present and selected from the group consisting of calcium sulfate, dicalcium phosphate, oyster shell flour, corn starch, rice starch, and mixtures thereof.

10. The composition of claim 9 wherein said vitamin is riboflavin and said powder is coated with about 0.5 to about 1.5 percent of said hydrophobic silica.

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☐ 1. Document ID: US 6746693 B2

Using default format because multiple data bases are involved.

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File: USPT

Jun 8, 2004

US-PAT-NO: 6746693

DOCUMENT-IDENTIFIER: US 6746693 B2

TITLE: Pharmaceutical excipient having improved compressibility

DATE-ISSUED: June 8, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Staniforth; John N.	Bath			GB
Sherwood; Bob E.	Amenia	NY		
Hunter; Edward A.	Cadosia	NY		

US-CL-CURRENT: 424/489; 264/112, 264/115, 424/464, 424/465, 424/479, 424/480,  
424/490, 424/499

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. Data
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☐ 2. Document ID: US 6713092 B1

L10: Entry 2 of 34

File: USPT

Mar 30, 2004

US-PAT-NO: 6713092

DOCUMENT-IDENTIFIER: US 6713092 B1

TITLE: Withania Somnifera composition, method for obtaining same and pharmaceutical, nutritional and personal care formulations thereof

DATE-ISSUED: March 30, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ghosal; Shibnath	Calcutta			IN

US-CL-CURRENT: 424/725; 424/773, 424/774

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. Data
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☐ 3. Document ID: US 6670369 B1

L10: Entry 3 of 34

File: USPT

Dec 30, 2003

US-PAT-NO: 6670369

DOCUMENT-IDENTIFIER: US 6670369 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Use of phanquinone for the treatment of alzheimer's disease

DATE-ISSUED: December 30, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Xilinas; Michel	Memeou			FR
Gerolymatos; Panayotis Nikolas	Kryoneri Attika			GR

US-CL-CURRENT: 514/282; 514/26, 514/296, 514/298

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K00C	Draw D
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☐ 4. Document ID: US 6521247 B1

L10: Entry 4 of 34

File: USPT

Feb 18, 2003

US-PAT-NO: 6521247

DOCUMENT-IDENTIFIER: US 6521247 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Dual iron containing nutritional supplement

DATE-ISSUED: February 18, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
deVries; Tina	Long Valley	NJ		

US-CL-CURRENT: 424/439; 424/441, 424/451, 424/452, 424/457, 424/464, 424/465,  
424/468, 424/489, 426/73, 426/74, 514/251 , 514/276

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K00C	Draw D
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☐ 5. Document ID: US 6495177 B1

L10: Entry 5 of 34

File: USPT

Dec 17, 2002

US-PAT-NO: 6495177

DOCUMENT-IDENTIFIER: US 6495177 B1



TITLE: Orally dissolvable nutritional supplement

DATE-ISSUED: December 17, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
deVries; Tina	Long Valley	NJ		
Valentine; William	Lawrenceville	GA		
Valentine; William K.	Lawrenceville	GA		

US-CL-CURRENT: [426/72](#); [424/439](#), [424/441](#), [424/464](#), [424/465](#), [426/285](#), [426/73](#), [426/74](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMHC	Draw D
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☐ 6. Document ID: US 6471994 B1

L10: Entry 6 of 34

File: USPT

Oct 29, 2002

US-PAT-NO: 6471994

DOCUMENT-IDENTIFIER: US 6471994 B1

TITLE: Pharmaceutical excipient having improved compressibility

DATE-ISSUED: October 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Staniforth; John N.	Bath			GB
Sherwood; Bob E.	Amenia	NY		
Hunter; Edward A.	Cadosia	NY		

US-CL-CURRENT: [424/489](#); [264/112](#), [264/115](#), [424/464](#), [424/490](#), [424/499](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMHC	Draw D
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☐ 7. Document ID: US 6423339 B1

L10: Entry 7 of 34

File: USPT

Jul 23, 2002

US-PAT-NO: 6423339

DOCUMENT-IDENTIFIER: US 6423339 B1

TITLE: Liquisolid systems and methods of preparing same

DATE-ISSUED: July 23, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Spireas; Spiridon	Newtown	PA	18940	

US-CL-CURRENT: [424/451](#); [264/40.4](#), [264/5](#), [264/6](#), [264/7](#), [424/456](#), [424/457](#), [424/458](#),  
[424/459](#), [424/461](#), [424/462](#), [424/464](#), [424/465](#), [424/468](#), [424/489](#), [424/490](#), [424/493](#),  
[424/494](#), [424/497](#), [424/501](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 8. Document ID: US 6303167 B1

L10: Entry 8 of 34

File: USPT

Oct 16, 2001

US-PAT-NO: 6303167

DOCUMENT-IDENTIFIER: US 6303167 B1

TITLE: Method of producing vitamin powders

DATE-ISSUED: October 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morris; Charles A.	Overland Park	KS		
Calhoon, Jr.; Francis W.	Olathe	KS		
Willis; Huey L.	Raymore	MO		

US-CL-CURRENT: [426/443](#); [424/442](#), [424/489](#), [426/442](#), [426/96](#), [514/458](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 9. Document ID: US 6153198 A

L10: Entry 9 of 34

File: USPT

Nov 28, 2000

US-PAT-NO: 6153198

DOCUMENT-IDENTIFIER: US 6153198 A

TITLE: Withania somnifera composition

DATE-ISSUED: November 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ghosal; Shibnath	Varanasi			IN

US-CL-CURRENT: [424/773](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 10. Document ID: US 6096337 A

L10: Entry 10 of 34

File: USPT

Aug 1, 2000

US-PAT-NO: 6096337

DOCUMENT-IDENTIFIER: US 6096337 A

TITLE: Liquisolid systems and methods of preparing same

DATE-ISSUED: August 1, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Spireas; Spiridon	Clifton	NJ	07011	
Bolton; Sanford M.	Tuscon	AZ	85750	

US-CL-CURRENT: 424/451; 264/40.4, 264/5, 264/6, 264/7, 424/456, 424/457, 424/458,  
424/459, 424/461, 424/462, 424/464, 424/465, 424/468, 424/489, 424/490, 424/493,  
424/494, 424/497, 424/501

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 11. Document ID: US 6020003 A

L10: Entry 11 of 34

File: USPT

Feb 1, 2000

US-PAT-NO: 6020003

DOCUMENT-IDENTIFIER: US 6020003 A

TITLE: Method of making spray-dried powders with high edible-oil loadings based on non-hydrolyzed gelatin

DATE-ISSUED: February 1, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stroh; Friedemann	Southgate	MI		
Bower; David	Trenton	MI		
Chaundy; Frederick	Gross Ile	MI		
Finnan; Jeffrey	Dearborn	MI		
Soblesky; Thomas	Canton	MI		

US-CL-CURRENT: 424/489; 424/464

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 12. Document ID: US 6001852 A

L10: Entry 12 of 34

File: USPT

Dec 14, 1999

US-PAT-NO: 6001852

DOCUMENT-IDENTIFIER: US 6001852 A

TITLE: Clioquinol for the treatment of Alzheimer's disease

DATE-ISSUED: December 14, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gerolymatos; Panayotis N.	Kryoneri Attikis			GR

US-CL-CURRENT: 514/311; 514/52

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 13. Document ID: US 5994323 A

L10: Entry 13 of 34

File: USPT

Nov 30, 1999

US-PAT-NO: 5994323

DOCUMENT-IDENTIFIER: US 5994323 A

TITLE: Pharmaceutical compositions comprising clioquinol in combination with vitamin B12 and therapeutic and prophylactic uses thereof

DATE-ISSUED: November 30, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gerolymatos; Panayotis N.	Kryoneri Attikis			GR

US-CL-CURRENT: 514/52; 514/305, 514/306, 514/308

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 14. Document ID: US 5980914 A

L10: Entry 14 of 34

File: USPT

Nov 9, 1999

US-PAT-NO: 5980914

DOCUMENT-IDENTIFIER: US 5980914 A

TITLE: Clioquinol for the treatment of Parkinson's disease

DATE-ISSUED: November 9, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gerolymatos; Panayotis N.	Kryoneri Attikis			GR

US-CL-CURRENT: 424/400; 424/433, 424/451, 424/464, 514/311

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 15. Document ID: US 5968550 A

L10: Entry 15 of 34

File: USPT

Oct 19, 1999

US-PAT-NO: 5968550

DOCUMENT-IDENTIFIER: US 5968550 A

TITLE: Liquisolid systems and methods of preparing same

DATE-ISSUED: October 19, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Spireas; Spiridon	Clifton	NJ	07011	
Bolton; Sanford M.	Tuscon	AZ	85750	

US-CL-CURRENT: 424/451; 424/456, 424/457, 424/458, 424/459, 424/461, 424/462,  
424/464, 424/465, 424/468, 424/489, 424/490, 424/493, 424/494, 424/497, 424/501

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. D
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☐ 16. Document ID: US 5800834 A

L10: Entry 16 of 34

File: USPT

Sep 1, 1998

US-PAT-NO: 5800834

DOCUMENT-IDENTIFIER: US 5800834 A

TITLE: Liquisolid systems and methods of preparing same

DATE-ISSUED: September 1, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Spireas; Spiridon	Clifton	NJ	07011	
Bolton; Sanford M.	Tuscon	AZ	85750	

US-CL-CURRENT: 424/451; 264/40.4, 264/5, 264/6, 264/7, 424/456, 424/457, 424/458,  
424/459, 424/461, 424/462, 424/464, 424/465, 424/468, 424/489, 424/490, 424/493,  
424/494, 424/497, 424/501

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. D
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☐ 17. Document ID: US 5445826 A

L10: Entry 17 of 34

File: USPT

Aug 29, 1995

US-PAT-NO: 5445826

DOCUMENT-IDENTIFIER: US 5445826 A

TITLE: Delivery system containing a gel-forming dietary fiber and a drug

DATE-ISSUED: August 29, 1995

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kuhrts; Eric H.	Santa Barbara	CA		

US-CL-CURRENT: 424/451; 424/464, 424/489, 424/490, 424/493, 424/494, 424/496

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMMC	Draw D
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☐ 18. Document ID: US 5194615 A

L10: Entry 18 of 34

File: USPT

Mar 16, 1993

US-PAT-NO: 5194615

DOCUMENT-IDENTIFIER: US 5194615 A

TITLE: Synthetic GTF chromium nicotinate material and its preparation

DATE-ISSUED: March 16, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jensen; Ned L.	Martinez	CA		

US-CL-CURRENT: 546/5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMMC	Draw D
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☐ 19. Document ID: US 4923855 A

L10: Entry 19 of 34

File: USPT

May 8, 1990

US-PAT-NO: 4923855

DOCUMENT-IDENTIFIER: US 4923855 A

TITLE: Synthetic GTF chromium material and process therefor

DATE-ISSUED: May 8, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jensen; Ned L.	Martinez	CA		

US-CL-CURRENT: 514/188; 546/5, 987/22

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMMC	Draw D
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☐ 20. Document ID: US 4915962 A

L10: Entry 20 of 34

File: USPT

Apr 10, 1990

US-PAT-NO: 4915962

DOCUMENT-IDENTIFIER: US 4915962 A

TITLE: Culinary seasoning composition

DATE-ISSUED: April 10, 1990

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Howard; Alan N.	Cambridge			GB2

US-CL-CURRENT: 426/74; 426/648, 426/649, 426/650

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw D
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☐ 21. Document ID: US 4605666 A

L10: Entry 21 of 34

File: USPT

Aug 12, 1986

US-PAT-NO: 4605666

DOCUMENT-IDENTIFIER: US 4605666 A

TITLE: Process for preparing spray-dried powders containing a water-soluble vitamin and powders prepared thereby

DATE-ISSUED: August 12, 1986

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schmidt; Douglass N.	Grosse Ile	MI		
Finnan; Jeffrey L.	Southgate	MI		
Lisa; Rudolph E.	Grosse Ile	MI		

US-CL-CURRENT: 514/474; 514/960

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw D
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☐ 22. Document ID: US 4603143 A

L10: Entry 22 of 34

File: USPT

Jul 29, 1986

US-PAT-NO: 4603143

DOCUMENT-IDENTIFIER: US 4603143 A

TITLE: Free-flowing, high density, fat soluble vitamin powders with improved stability

DATE-ISSUED: July 29, 1986

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schmidt; Douglass N.	Grosse Ile	MI		

US-CL-CURRENT: 514/458

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 23. Document ID: US 4568547 A

L10: Entry 23 of 34

File: USPT

Feb 4, 1986

US-PAT-NO: 4568547

DOCUMENT-IDENTIFIER: US 4568547 A

TITLE: Solid pharmaceutical compositions comprising MSM and their production

DATE-ISSUED: February 4, 1986

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Herschler; Robert J.	Camas	WA	98607	

US-CL-CURRENT: 514/772; 264/117, 424/465, 424/489, 514/951, 514/960

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 24. Document ID: US 4551177 A

L10: Entry 24 of 34

File: USPT

Nov 5, 1985

US-PAT-NO: 4551177

DOCUMENT-IDENTIFIER: US 4551177 A

**\*\* See image for Reexamination Certificate \*\***

TITLE: Compressible starches as binders for tablets or capsules

DATE-ISSUED: November 5, 1985

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Trubiano; Paolo C.	Somerville	NJ		
Kasica; James J.	Somerville	NJ		

US-CL-CURRENT: 106/206.1; 106/215.2, 106/217.01, 127/32, 127/71, 536/102

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMOC	Draw D
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☐ 25. Document ID: US 4519961 A

L10: Entry 25 of 34

File: USPT

May 28, 1985

US-PAT-NO: 4519961

DOCUMENT-IDENTIFIER: US 4519961 A

TITLE: Production of dry powders of substances which are sensitive to oxidation

DATE-ISSUED: May 28, 1985

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schumacher; Horst	Bobenheim			DE
Grafen; Paul	Weisenheim			DE

US-CL-CURRENT: 264/4.6; 424/499, 427/213, 514/725

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 26. Document ID: US 4486435 A

L10: Entry 26 of 34

File: USPT

Dec 4, 1984

US-PAT-NO: 4486435

DOCUMENT-IDENTIFIER: US 4486435 A

TITLE: Spray-dried vitamin powders using hydrophobic silica

DATE-ISSUED: December 4, 1984

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schmidt; Douglass N.	Grosse Ile	MI		
Finnan; Jeffrey L.	Southgate	MI		
Lisa; Rudolph E.	Grosse Ile	MI		

US-CL-CURRENT: 514/251; 514/167, 514/276, 514/345, 514/458, 514/474, 514/52,  
514/725, 514/769, 514/770, 514/778

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 27. Document ID: US 3962384 A

L10: Entry 27 of 34

File: USPT

Jun 8, 1976

US-PAT-NO: 3962384

DOCUMENT-IDENTIFIER: US 3962384 A

TITLE: Spray-drying technique for preparing agglomerated powders

DATE-ISSUED: June 8, 1976

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cannalunga; Marco Alfred	Fort Lee	NJ		
Czarecki; Louis Vincent	Succasunna	NJ		

US-CL-CURRENT: 264/7; 264/117, 264/13

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 28. Document ID: US 3959472 A

L10: Entry 28 of 34

File: USPT

May 25, 1976

US-PAT-NO: 3959472

DOCUMENT-IDENTIFIER: US 3959472 A

TITLE: Free-flowing, high density, agglomerated riboflavin powders

DATE-ISSUED: May 25, 1976

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cannalunga; Marco Alfred	Fort Lee	NJ		
Czarecki; Louis Vincent	Succasunna	NJ		

US-CL-CURRENT: 514/251; 514/951

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 29. Document ID: US 3947596 A

L10: Entry 29 of 34

File: USPT

Mar 30, 1976

US-PAT-NO: 3947596

DOCUMENT-IDENTIFIER: US 3947596 A

TITLE: Free-flowing, high density, agglomerated vitamin A powder compositions

DATE-ISSUED: March 30, 1976

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cannalunga; Marco Alfred	Fort Lee	NJ		
Czarecki; Louis Vincent	Succasunna	NJ		

US-CL-CURRENT: 514/725

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 30. Document ID: US 3914430 A

L10: Entry 30 of 34

File: USPT

Oct 21, 1975

US-PAT-NO: 3914430

DOCUMENT-IDENTIFIER: US 3914430 A

TITLE: Free-flowing, high density, agglomerated vitamin E powder compositions

DATE-ISSUED: October 21, 1975

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cannalunga; Marco Alfred	Fort Lee	NJ		
Czarecki; Louis Vincent	Succasunna	NJ		

US-CL-CURRENT: 514/458; 514/774

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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